

PULP & PAPER



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THE COVER

Chemical pulping technology is rapidly changing, reacting to various market factors, such as the new environmentalism and demands for higher quality pulp. The newest greenfield mills are installing the most efficient and environmentally safe equipment to ensure their competitiveness into the next decade. The cover photo, a 3-D CAD diagram of Alabama Pine Pulp Co.'s fiber line in Perdue, Hill, Ala., represents the pulp mill of the future. This issue's focus on chemical pulping includes a report on the cost of a kraft pulp mill in the year 2000 and also explores alternatives to conventional chlorine-based pulping. (Photo from PASCE—Plant Applications and Software from Combustion Engineering—system courtesy of H.A. Simons Ltd.)

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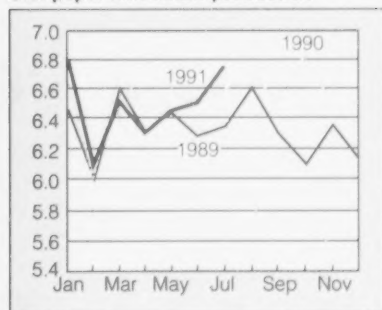
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MONTH IN STATISTICS

U.S. paper and board production



U.S. production of paper and paperboard totaled 6.7 million tons in July, up 2.9% from the same month last year, according to the American Paper Institute. The rising trend evident in June continued through July and into August, according to preliminary data. The seasonally adjusted July-August rate may have moved to a record 81 million tpy. Paper production receded slightly during the July-August period, but paperboard continued to show gains.

Among major grades, newsprint and uncoated free-sheet led a rebound in communication papers. Strong demand for bond papers helped fuel a 13% increase in uncoated free-sheet shipments between June and July. The slowdown in magazine advertising continued to hurt coated groundwood, but coated free-sheet shipments climbed in response to strong demand from catalog publishers. Containerboard output was up 13% on the strength of continued double-digit gains in production for export.

Canadian newsprint shipments totaled 697,000 metric tons in July, down 7.2% from July 1990. Newsprint mills operated at 85% capacity, down from 94% last year. Woodpulp shipments climbed 11.4% to 663,000 tons, despite a drop in operating rates from 89% last year to 85% in July 1991.

	Latest month (000 short tons)	% change from year ago	Annualized year-to-date (000 short tons)	% change from year ago
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PAPER & PAPERBOARD PRODUCTION¹

Newsprint	July	586	4.6	6,799	4.6
Uncoated groundwood (s)	July	159	4.6	1,751	-1.9
Coated paper (s)	July	640	0.9	7,120	-3.8
Uncoated free-sheet (s)	July	1,044	10.2	11,281	-1.5
Other printing/writing	July	116	-7.2	1,466	-5.2
Total packaging and other paper (s)	July	356	-6.6	4,474	-1.9
Tissue	July	440	-8.7	5,679	-1.0
Total paper	July	3,342	1.9	38,569	-1.0
Unbleached kraft paperboard	July	1,798	3.6	20,381	1.7
Semichemical medium	July	481	-1.6	5,662	-0.7
Bleached paperboard	July	394	11.0	4,610	2.8
Recycled paperboard	July	729	4.6	8,891	-0.9
Total paperboard	July	3,403	3.8	39,544	0.9

Total U.S. paper and paperboard output	July	6,745	2.9	78,113	-0.1
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PULP, WASTEPAPER & FIBER²

Total U.S. woodpulp production	June	5,197	0.4	63,202	1.6
Market pulp production	June	745	-5.0	9,003	3.8
Wastepaper consumption at paper/board mills	June	1,795	-0.2	21,225	2.4
Pulpwood consumption (cords)	June	7,992	-0.6	98,896	0.1

CONVERTED PRODUCTS STATISTICS³

Corrugated box shipments (billion ft ²)	July	27,968	4.8	184,805 ⁶	-1.0
Containerboard inventories at U.S. box plants and mills	June 1	2,637	5.4		

INTERNATIONAL TRADE²

U.S. paper imports (including products)	June	967	-12.6	12,148	-8.5
Imports of Canadian newsprint	June	603	-13.4	7,657 ⁶	-9.7
U.S. paper exports (including products)	June	733	27.7	8,252	20.9
Exports of unbleached kraft linerboard	June	270	10.2	3,096	15.4
Exports of woodpulp	June	573	2.3	6,475	9.8
Norscan pulp inventories ⁴	July 31	1,653	18.3		
Norscan pulp operating rates ⁴	July	84%	87%	85%	87%

CANADIAN STATISTICS⁵ (reported in metric tons)

Total newsprint shipments	July	697	-7.2	5,068 ⁶	-7.7
Operating rates	July	85%	94%	89%	95%
Inventories held by U.S. consumers	July 31	1,433	3.8		
Other paper/board shipments	July	631	2.6	4,199	-2.6
Woodpulp shipments (export only)	July	663	11.4	4,842	10.0
Operating rates	July	85%	89%	89%	89%

1. American Paper Institute. 2. API, Bureau of Census, American Pulpwood Assn. 3. Fibre Box Assn., Paperboard Packaging Council. 4. North American/Scandinavian paper-grade market pulp. 5. Canadian Pulp & Paper Assn. 6. Not annualized. (s) = Shipments.

Kraft paper: New competition from recycled grades and imports dims growth prospects

Grade Structure: Commodity bag and sack paper is the largest category of kraft packaging papers, accounting for about 60% of total shipments in 1990, followed by multiwall at 32%, converting at 5%, and wrapping at 3%.

Production/capacity: Domestic shipments of unbleached kraft paper (UKP) declined by 11.4% to 2,377 million tons in 1990, after declining 4.2% in 1989. Grocery bag and sack paper shipments declined 18.5%, and multiwall paper shipments dropped only 0.2%. Operating rates plummeted to around 85% because of sharply lower shipments.

Total bleached kraft paper (BKP) shipments increased 3.4% to 484,000 tons in 1990. This number may represent the peak level of shipments for some time because McDonalds and other major fast-food restaurants are now using more recycled bag paper. The decline in demand for BKP has resulted in some mills converting production to nonpackaging bleached paper grades. As a result, BKP is more available now than at any time in the past few years. Fast-food makes up about 140,000 tpy of bleached bag paper use.

For the first seven months of 1991, total UKP shipments were down about 3% from the year before, with mixed results among the major grades. Multiwall paper shipments were down 4.7%, due to the continuing recession in construction and industrial activity. Domestic shipments of grocery bag and sack paper during the first seven months were up about 2%, marking a turnaround from the long-term decline in this segment.

Shipments of BKP fell sharply in the first half of 1991 as the transition to recycled grades at fast-food restaurants gained momentum. Domestic BKP shipments fell 15% in the first seven months of the year. Specialty packaging papers increased a strong 11%, paced by the startup of two new paper machines by Consolidated Paper Co. and Longview Fibre Co. at the end of 1990. Longview's new machine produces both bleached and unbleached lightweight packaging grades, and Consolidated Paper's new machine produces lightweight coated specialty grades for packaging and labels.

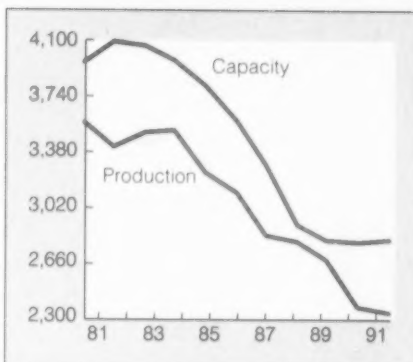
Outlook: Following a decade-long decline, grocery bag and sack paper shipments may have finally bottomed out. Demand for kraft paper grocery bags is expected to benefit from increased environmental concerns over plastic bags. Some of the gains in the grocery bag war will be shared with recycled bag paper, which currently accounts for approximately 7% of total UKP shipments.

Bleached kraft has lost minimal market share to plastic bags in traditional food and restaurant markets, but recycled grades are expected to gain market share. As a result, BKP shipments will likely fall by 10% or more this year. Shipments of multiwall paper and shipping sacks will continue to be weakened by poor market demand in specialty and commodity chemicals, manufacturing, and agricultural products. However, demand will remain good for specialty multiwall packaging for pet foods, bakery goods, and other consumer products.

Pricing: Producers increased BKP and UKP prices approximately \$40/ton in the first quarter of 1989 but have been unsuccessful in several subsequent efforts to raise prices further. In fact, heavyweight 70-lb grocery sack paper prices have been sharply discounted over the past year. Beginning in late 1990, prices fell from about \$495/ton to approximately \$425 to \$435/ton this year. Multiwall paper prices have remained firm at about \$550 to \$560/ton for standard 50-lb grades, and lightweight unbleached grades have also remained firm at about \$630 to \$660/ton for 30-lb grades. Prices of lightweight bleached grades have also remained unchanged at about \$800 to \$810/ton despite the sharp drop in shipments.

Year-end price history for 70-lb grocery sack paper is as follows: 1980, \$280; 1981, \$300; 1982, \$240; 1983, \$280; 1984, \$330; 1985, \$300; 1986, \$365; 1987, \$400; 1988, \$455/\$465; 1989, \$495/\$500; 1990, \$475. Prices for 50-lb multiwall sack paper were as follows: 1980, \$375; 1981, \$405; 1982, \$360; 1983, \$390; 1984, \$410; 1985, \$360; 1986, \$400; 1987, \$460; 1988, \$510/\$520; 1989, \$550/\$560, 1990, \$550/\$560.

SUPPLY/DEMAND (000 tons)



FORECAST (000 tons)

	1989	1990	1991e
Shipments	2,681	2,377	2,340
Capacity	2,809	2,795	2,811
Utilization rate	95.4%	85.0%	83.2%
Imports	240	235	250
Exports	95	90	80
Apparent U.S. consumption	2,826	2,522	2,510
lb/capita	22.4	20.2	20.1
GNP ratio ¹	0.70	0.63	0.62

e = estimate.

¹ 1,000 tons/\$ billion real GNP.

Source: American Paper Institute, Pulp & Paper estimates.

TOP U.S. PRODUCERS (000 tpy)

	Annual capacity ¹	Market share (%)
1. Stone Container	576	20.5
2. Longview Fibre	441	15.7
3. Union Camp	300	10.7
4. Georgia-Pacific	295	10.5
5. Gaylor Container	270	9.6
6. International Paper	260	9.2
7. Champion International	195	6.9
8. Chesapeake	115	4.1
9. Port Townsend	100	3.6
10. Willamette	70	2.5

Market share of top five companies:

67.0%

Market share of top ten companies:

93.3%

Total U.S. capacity (1991):

2.811 million short tons

¹ Unbleached kraft paper capacity does not include bleached kraft paper or specialty grades.